**Computer & Networking – program curriculum will be based on Cisco Networking Academy courses**

**IT Essentials I -** This course covers the fundamentals of computer hardware and software and advanced concepts such as security, networking, and the responsibilities of an IT professional. Students who complete this course will be able to describe the internal components of a computer, assemble a computer system, install an operating system, and troubleshoot using system tools and diagnostic software. Students will also be able to connect to the Internet and share resources in a networked environment. New topics in this version include mobile devices such as tablets and smart-phones and client side virtualization. Expanded topics include the Microsoft Windows 7 operating system, security, networking, and troubleshooting.

Hands-on lab activities are an essential element of the course. The Virtual Laptop and Virtual Desktop are standalone tools designed to supplement classroom learning and provide an interactive "hands-on" experience in learning environments with limited physical equipment.

Cisco Packet Tracer activities are designed for use with Packet Tracer 5.3. The use of Packet Tracer will support alignment with the new CompTIA A+ certification objectives.

The IT Essentials curriculum helps students prepare for the ***CompTIA A+ certification exams 220-801 and 220-802.***

**CCNA Exploration -** The Cisco® CCNA® Exploration curriculum is designed for Cisco Networking Academy® students who are seeking entry-level information and communication technology (ICT) skills. CCNA Exploration provides an integrated and comprehensive coverage of networking topics, from fundamentals to advanced applications and services, while providing opportunities for hands-on practical experience and soft-skills development.

While primarily designed for postsecondary institutions, the curriculum is appropriate for students at many education levels if they have the required skills, and if the instructional approach complements their learning style and educational goals.

* **Network Fundamentals -** This course introduces the architecture, structure, functions, components, and models of the Internet and other computer networks. It uses the OSI and TCP layered models to examine the nature and roles of protocols and services at the application, network, data link, and physical layers. The principles and structure of IP addressing and the fundamentals of Ethernet concepts, media, and operations are introduced to provide a foundation for the curriculum. Labs use a “model Internet” to allow students to analyze real data without affecting production networks. Packet Tracer (PT) activities help students analyze protocol and network operation and build small networks in a simulated environment. At the end of the course, students build simple LAN topologies by applying basic principles of cabling, performing basic configurations of network devices such as routers and switches, and implementing IP addressing schemes.
* **Routing & Protocols Concepts** - This course describes the architecture, components, and operation of routers, and explains the principles of routing and routing protocols. Students analyze, configure, verify, and troubleshoot the primary routing protocols RIPv1, RIPv2, EIGRP, and OSPF. By the end of this course, students will be able to recognize and correct common routing issues and problems. Students complete a basic procedural lab, followed by basic configuration, implementation, and troubleshooting labs in each chapter. Packet Tracer activities reinforce new concepts, and allow students to model and analyze routing processes that may be difficult to visualize or understand.
* **LAN Switching & Wireless** - This course provides a comprehensive, theoretical, and practical approach to learning the technologies and protocols needed to design and implement a converged switched network. Students learn about the hierarchical network design model and how to select devices for each layer. The course explains how to configure a switch for basic functionality and how to implement Virtual LANs, VTP, and Inter-VLAN routing in a converged network. The different implementations of Spanning Tree Protocol in a converged network are presented, and students develop the knowledge and skills necessary to implement a WLAN in a small-to-medium network.
* **Accessing WAN** - This course discusses the WAN technologies and network services required by converged applications in enterprise networks. The course uses the Cisco Network Architecture to introduce integrated network services and explains how to select the appropriate devices and technologies to meet network requirements. Students learn how to implement and configure common data link protocols and how to apply WAN security concepts, principles of traffic, access control, and addressing services. Finally, students learn how to detect, troubleshoot, and correct common enterprise network implementation issues.

After completing all four courses of CCNA Exploration, students will be prepared to take the ***Cisco CCNA certification exam***.

**Minimum System Requirements**

Curriculum requirements:

● 1 Student PC per student; 1 local curriculum server

Lab bundle requirements:

Detailed equipment information, including descriptions and part numbers, is available in the official CCNA Discovery & CCNA Exploration Equipment List on Academy Connection. Please refer to that document for the latest information, which includes specifications for the following minimum equipment required:

● 3 Cisco routers

● 3 Two-Port Serial WAN Interface Cards

● 3 Cisco switches

● 2 Linksys wireless routers

● 3 Lab PCs

● Assorted Ethernet and Serial cables and hubs

**Certificate of Achievement**

**in**

**Electronics**

(Fundamentals with emphasis in system installers)

**AAS degree**

**in**

**Telecommunication**

**AAS degree**

**in**

**Computer & Networking**

**AAS degree**

**in**

**Electronic Technology**